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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/791,295

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EXAMINER

ARENA, ANDREW OWENS

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/791,295	<b>Applicant(s)</b> SUEHIRO ET AL.	
	<b>Examiner</b> Andrew O. Arena	<b>Art Unit</b> 2811	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 April 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-11 and 26-45 is/are pending in the application.  
4a) Of the above claim(s) 7-11, 36 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 26-35, 37-39 and 41-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/4, 7/8, 7/11, all 2008</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 7-11, 36 and 40 stand withdrawn from further consideration per 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction in the reply filed on 9/28/2007.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 45 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 45 recites "submount is formed in said indented portion", which is more specific than, and therefore not supported by, the relevant portions of the original disclosure. The original disclosure recites "concave portions on the leads...are engaged with convex portions on the lens" (spec pg 12 ln 22-24, pg 13 ln 24-26), that "concave portions are formed by indentation" (pg 13 ln 8-10) and that "the submount...is disposed on the...leads" (pg 13 ln 10-12), but provides no support for specific structural relationship between the submount and the indentations/convex portions beyond "on".

***Claim Rejections - 35 USC § 103***

Statute 35 U.S.C. § 103(a) is the basis for obviousness rejections made herein:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 26-35, 37-39 and 41-45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen (US 6,531,328), Kenmochi (JP 2000-200929) and Soules (US 6,252,254).

**RE claim 1**, Chen discloses a light emitting apparatus (e.g., Fig 18), comprising:  
a semiconductor light emitting element (3, col 5 ln 24 & 30) that is mounted on an electrode (17A/18A, col 5 ln 38) and emits light with a predetermined  $\lambda$  (col 5 ln 18-19);  
a light-transmitting portion (23) that includes a recess (space occupied by 3) to house the semiconductor light emitting element, the light-transmitting portion comprising a light-transmitting material and affixed to said electrode by a sealant (5, col 5 ln 27 ) formed on said light emitting element; and

wherein said light transmitting portion comprises a convex portion (bottom) and said electrode comprises a concave portion which engages with said convex portion to allow the light-transmitting portion to be positioned on the electrode (apparent in Fig 14).

Chen differs from the claimed invention only in not disclosing a phosphor layer on a surface of the recess.

Kenmochi is directed to an analogous light emitting apparatus and discloses a lens (7) having a recess (9) to accommodate an LED (2), said lens having a convex bottom portion which engages with a metal concave surface (5a) to house the LED.

Soules is directed to an analogous light emitting apparatus (Fig 3) and discloses a light transmitting lens (36) including a recess to house the LED (32), being affixed by a sealant (38, col 7 ln 12-14) formed on said LED, and a phosphor layer (34, col 6 ln 62) formed on the surface of a recess in the lens and including a phosphor excited by the LED light (col 1 ln 50-55, col 4 ln 40 & 49) to make pleasing light (col 2 ln 26-32).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that in view Kenmochi and Soules, that the light emitting apparatus of Chen further comprises a phosphor layer portion that is formed on a surface of the recess, the phosphor layer portion including a phosphor to be excited by irradiating light emitted from the semiconductor light emitting element; at least to make pleasing light using a known suitable package with predictable results.

**RE claim 2**, Chen discloses the light transmitting portion has a light convergence shape (lens 23, col 5 ln 58) to converge light emitted from the light emitting element.

**RE claim 3**, Chen discloses the semiconductor light emitting element is a flip-chip type LED element (col 5 ln 30) that emits light from its light emission surface located on the opposite side of its mounting surface.

**RE claim 4**, Chen discloses the recess is located close to the semiconductor light emitting element along the profile of the semiconductor light emitting element.

**RE claim 5**, Chen discloses the semiconductor light emitting element is composed of a plurality of LED elements in a predetermined arrangement (col 6 ln 7-9).

**RE claim 26**, Chen in view of Soules discloses said sealant comprises a transparent resin (Chen col 5 ln 27; Soules col 7 ln 14).

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**RE claim 27**, Chen discloses a plurality of leads (17, 18, col 5 ln 37); and a submount (8) formed on said plurality of leads, said light emitting element being formed on said submount (Fig 12, 14, 18).

**RE claim 28**, Chen discloses said submount comprises a thermally conductive submount (“good heat dissipation” col 5 ln 63-67).

**RE claim 29**, Chen discloses said light transmitting portion is formed on said plurality of leads, said recess being aligned with said light emitting element.

**RE claim 30**, Chen discloses a wiring pattern (17/18A) formed on said submount, said light emitting element mounted on said wiring pattern (col 5 ln 30-32)..

**RE claim 31**, Chen discloses said light emitting element is flip-chip bonded through bumps onto the wiring pattern (col 5 ln 29-32).

**RE claim 32**, Chen discloses said submount comprises a viahole, said wiring pattern being electrically connected through said viahole to said lead (col 5 ln 37-39).

**RE claim 33**, Chen discloses said light emitting element emits light having a wavelength in a range from 450nm to 480nm (“blue light” col 5 ln 18-19).

**RE claim 34**, Chen in view of Soules discloses said phosphor layer portion comprises Ce:YAG (Soules col 1 ln 60, col 2 ln 9, col 2 ln 21, col 5 ln 57-59).

**RE claim 35**, Chen in view of Soules discloses said phosphor layer portion comprises a uniform thickness (Soules Fig 3, phosphor layer 34).

**RE claim 37**, Chen discloses a light emitting apparatus (eg, Fig 18), comprising: a light emitting element (3, col 5 ln 24 & 30) that is mounted on an electrode (17A, 18A, col 5 ln 38) and emits light with a predetermined wavelength (col 5 ln 18-19);

a lens (23, col 5 ln 58) comprising a recessed portion (space occupied by 3) which has a predetermined size, said light emitting element being housed in said recessed portion such that said lens is formed over said light emitting element; and

wherein a sealant (5, col 5 ln 27) is formed between said light emitting element and said lens, for sealing said light emitting element,

wherein said lens is affixed to said electrode by said sealant, and

wherein said light transmitting portion comprises a convex portion (bottom) and said electrode comprises a concave portion which engages with said convex portion to allow the light-transmitting portion to be positioned on the electrode (apparent in Fig 14).

Chen differs from the claimed invention only in not disclosing a phosphor layer on a surface of the recess.

Kenmochi is directed to an analogous light emitting apparatus and discloses a lens (7) having a recess (9) to accommodate an LED (2), said lens having a convex bottom portion which engages with a metal concave surface (5a) to house the LED.

Soules is directed to an analogous light emitting apparatus (Fig 3) and discloses a light transmitting lens (36) including a recess to house the LED (32), being affixed by a sealant (38, col 7 ln 12-14) formed on said LED, and a phosphor layer (34, col 6 ln 62) formed on the surface of a recess in the lens and including a phosphor excited by the LED light (col 1 ln 50-55, col 4 ln 40 & 49) to make pleasing light (col 2 ln 26-32).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that in view Kenmochi and Soules, that the light emitting apparatus of Chen further comprises a phosphor layer formed on a surface of said

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recessed portion, said phosphor layer including a material which is excited by light emitted from the light emitting element; at least to make pleasing light using a known suitable package with predictable results.

**RE claim 38**, Chen in view of Soules discloses said phosphor layer portion comprises an inner surface having a shape dependent upon a shape of said recess.

**RE claim 39**, Chen discloses wherein said pre-molded light-transmitting portion further comprises a positioning portion to allow said pre-molded light-transmitting portion to be precisely positioned to said semiconductor light emitting element.

Functional language does not structurally distinguish. See MPEP § 2114.

**RE claim 41**, Chen discloses said recess comprises a predetermined size which is other than defined by a thickness of said phosphor layer portion. See MPEP § 2114.

**RE claim 42**, Chen discloses said recess comprises a predetermined size which is other than defined by a thickness of said phosphor layer portion. See MPEP § 2114.

**RE claim 43**, Chen in view of Soules discloses said semiconductor light emitting element is mounted on a surface of said electrode and said light-transmitting portion is affixed to said surface of said electrode by said sealant.

**RE claim 44**, Chen in view of Soules discloses (Soules Fig 3) a gap is formed between a surface of said phosphor layer portion (34) and said LED, said sealant (38) filling said gap. Soules also discloses a phosphor directly on the LED (col 3 ln 48).

Chen in view of Soules differ from the claimed invention only in not explicitly disclosing the gap is between said phosphor layer and said light transmitting portions.

The difference amounts a mere reversal of the phosphor layer and sealant.



It would have been obvious to a person having ordinary skill in the art at the time the invention was made to reverse the phosphor layer and sealant; as a design choice with predictable results achieving the same effect. See also MPEP § 2144.04(VI)(C).

**RE claim 45**, Chen discloses the claim 1 apparatus, further comprising (Fig 18):

a thermally-conductive submount (8, col 5 ln 63-67),

wherein said electrode comprises:

a first lead (18) comprising an indented portion (left side); and

a second lead (17) comprising an indented portion (right side),

wherein said submount is formed in said indented portion of said 1st & 2nd leads,

wherein said electrode further comprises a first wiring pattern (18A, col 5 ln 32) formed on a surface of said submount which is on said indented portion of said first lead, and a second wiring pattern (17A) formed on a surface of said submount which is on said indented portion of said second lead,

wherein said first and second wiring patterns are separated at a location which is between said recess of said light-transmitting portion and said submount,

wherein said sealant comprises a silicon sealant (Soules col 7 ln 14) which is formed between said first wiring pattern (18A) and said light-transmitting portion (23), and between said second wiring pattern and said light-transmitting portion, and

wherein said light-transmitting portion comprises a convex portion and a bottommost surface which is formed opposite said convex portion and contacts said electrode, said recess being formed in said bottommost surface.

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen, Kenmochi and Soules as applied to claim 1, further in view of Roberts (US 6,335,548).

**RE claim 6**, Chen discloses the semiconductor light emitting element is composed of a plurality of LED elements in a predetermined arrangement (col 6 ln 7-9).

Chen differs from the claimed invention only in not disclosing a plurality of LED elements with different emission wavelengths.

Roberts teaches (Fig 19) a plurality of LED elements (col 29 ln 64-65) with different emission wavelengths (col 30 ln 12-14) for any color desired (col 30 ln 12-20).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that in view of Roberts, the plurality of LED elements of Chen have with different emission wavelengths; at least to produce light of any color desired.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of time extension per 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew O. Arena whose telephone number is 571-272-5976. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571- 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. For more info about PAIR, see <http://pair-direct.uspto.gov>. For questions PAIR access, contact the Electronic Business Center at 866-217-9197 (toll-free). For assistance from a USPTO Customer Service Rep or access to the automated info system, call 800-786-9199 or 571-272-1000.

/Andrew O. Arena/  
Examiner, Art Unit 2811  
13 August 2008

/Lynne A. Gurley/  
Supervisory Patent Examiner, Art  
Unit 2811